PCM-4825/4825L

486-Based Single Board Computer with SVGA/LCD and Audio Interface

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Packing list

Before you begin installing your card, please make sure that the following materials have been shipped:

- 1 PCM-4825/4825L All-in-One Single Board Computer
- 1 utility disk with system BIOS, VGA BIOS utility programs
- 3 SVGA driver disks
- 1 audio driver disk (PCM-4825 only)
- 1 audio cable (PCM-4825 only)
- 1 3.5" IDE flat cable
- 1 keyboard/mouse cable
- 1 secondary serial port cable (RS-232/422/485)
- 1 parallel cable
- 1 floppy cable

If any of these items are missing or damaged, contact your distributor or sales representative immediately.

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CHAPTER 1

General Information

This chapter gives background information on the PCM-4825/4825L.

Sections include:

- Card specifications
- Card layout and dimensions

1.1 Introduction

The PCM-4825/4825L is the ultimate cost-effective solution for limited space applications. It offers all the functions of an AT-compatible industrial computer on a single board and only occupies the space of a 3 1/2" hard drive. The PCM-4825/4825L comes with an embedded high-performance 5x86 processor and audio on-board. For maximum performance, the PCM-4825/4825L also supports an EDO/FPM DRAM SIMM socket that can accept up to 32 MB memory.

On-board features include a 16-bit audio controller (PCM-4825 only), support for a VL-Bus Enhanced IDE interface with up to Mode 3 transfer protocol, one parallel port, two serial ports (RS-232 and RS-232/422/485) with DB-9 connector as COM1 and a mini-DIN PS/2 keyboard/mouse interface. A local bus SVGA/LCD display controller (LCD, EL and CRT displays) allows LCD screen resolutions up to 1024 x 768 and CRT resolutions up to 1280 x 1024 @ 16 colors.

The PCM-4825/4825L complies with the "Green Function" standard and supports three types of power saving features: Normal, Doze, and Sleep modes.

The display type configuration is done through software. A single Flash chip holds the system BIOS and the VGA BIOS. This minimizes the number of chips and eases configuration. You can change the display BIOS simply by programming the Flash chip.

If you need any additional functions, the PCM-4825/4825L has a PC/104 connector for future upgrades.

1.2 Features

- Ultra-compact size single board computer as small as a 3 1/2" hard disk drive (145 mm x 102 mm)
- On-board 5x86-133 (DX5-133) CPU
- Up to 32 MB on-board EDO/Fast Page-mode DRAM
- Local-bus SVGA display controller (LCD, EL and CRT displays), flat panel type configured by programming the Flash chip
- 16-bit audio interface (PCM-4825 only)
- Supports M-Systems DiskOnChip® 2000 flash memory
- Built-in VL-Bus Enhanced IDE (AT bus) hard disk drive interface
- On-board mini-DIN PS/2 keyboard/mouse connector
- Two serial ports: one RS-232, one RS-232/422/485 or infared selectable (uses 16C550 UARTs with 16 byte FIFO)
- Upgradeable through PC/104 module
- Green engine with sleep mode and low power consumption
- Single +5 V power supply

1.3 Specifications

1.3.1 Standard SBC functions

- **CPU**: Embedded AMD 5x86-133 (DX5-133) processor
- **BIOS**: AWARD 128 KB Flash memory
- **Chipset**: VIA VT82C496G
- **System memory**: One 72-pin SIMM sockets (accepts 1 MB, 2 MB, 4 MB, 8 MB, 16 MB and 32 MB). Supports FPM or EDO DRAM from 1 MB to 32 MB.
- **Enhanced IDE hard disk drive interface**: Supports up to two IDE (VL-bus) hard disks. BIOS auto-detect and PIO Mode 3 transfer protocol
- **Serial ports**: One serial RS-232 port, one serial RS-232/422/485 port. Two 16550 serial UARTs
- **Parallel port**: One parallel port, supports SPP/EPP/ECP mode
- **Infrared port**: Shared with COM2. Transfer rate up to 115 kbps.
- **Keyboard/mouse connector**: Mini-DIN connector supports standard PC/AT keyboard and a PS/2 mouse
- **Power management**: Supports power saving modes including Normal/ Doze/Sleep modes. APM 1.1 compliant

1.3.2 Local-bus flat panel/VGA interface

- **Chipset**: C&T 65550
- **Display memory**: 1 MB DRAM
- **Display type**: Supports CRT and flat panel (EL, LCD and gas plasma flat panel) displays. Can display CRT and flat panel simultaneously
- **Flat panel display mode:** Panel resolution supports up to 1024 x 768.
- **CRT display mode**: Non-interlaced CRT monitors resolutions up to 1280 x 1024 @ 16 colors.

1.3.3 Audio function (PCM-4825)

- **Chipset**: ESS 1868
- **Audio controller**: 16-bit Sound Blaster Pro compatible
- **Stereo sound**: Full-duplex, integrated 3D audio
- **Audio interface**: Mic in, Line in, CD audio in; Line out, Stereo Speaker out

1.3.4 Mechanical and environmental

- **Dimension**: 5.9" (L) x 4.2" (W) (145 mm x 102 mm)
- **Power supply voltage**: +5 V (4.75 V to 5.25 V)
- **Max. power requirements**: +5 V @ 2 A (typical)
- **Operating temperature**: 32° F to 140° F (0° C to 60° C)
- **Weight**: 0.65 kg (weight of total package)

1.4 Board layout and dimensions

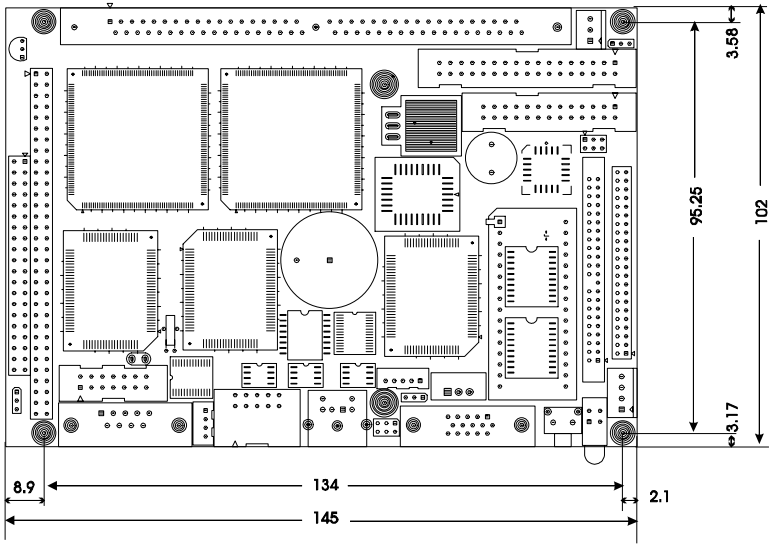


Figure 1-1: PCM-4825/4825L dimensions

CHAPTER 2

Installation

This chapter tells how to set up the PCM-4825/4825L hardware, including instructions on setting jumpers and connecting peripherals, switches and indicators. Be sure to read all the safety precautions before you begin the installation procedure.

2.1 Jumpers and connectors

Connectors on the board link it to external devices such as hard disk drives, a keyboard or expansion bus connectors. In addition, the board has a number of jumpers that allow you to configure your system to suit your application.

The table below lists the function of each of the board jumpers and connectors:

Table 2-1: PCM-4825/4825L jumpers

Label	Function
J2	DOC 2000 address setting
J3	LCD power selector
J4	Clear CMOS
J5	Audio AMP power selector
J7	COM2 selector

Table 2-2: PCM-4825/4825L connectors

Label	Function
CN1	Power connector (-5 V, -12 V)
CN2	Floppy disk connector
CN3	PC/104 connector
CN4	Parallel port connector
CN5	PC/104 connector
CN6	Flat panel connector
CN7	Hard disk connector
CN8	IR connector (infrared)
CN9	COM2 connector
CN10	CD audio in connector
CN11	Audio connector
CN12	Power connector (+5 V, +12 V)
CN13	COM1 connector
CN14	PS/2 keyboard + PS/2 mouse
CN15	CRT display connector
J6	Reset switch

2.2 Locating jumpers

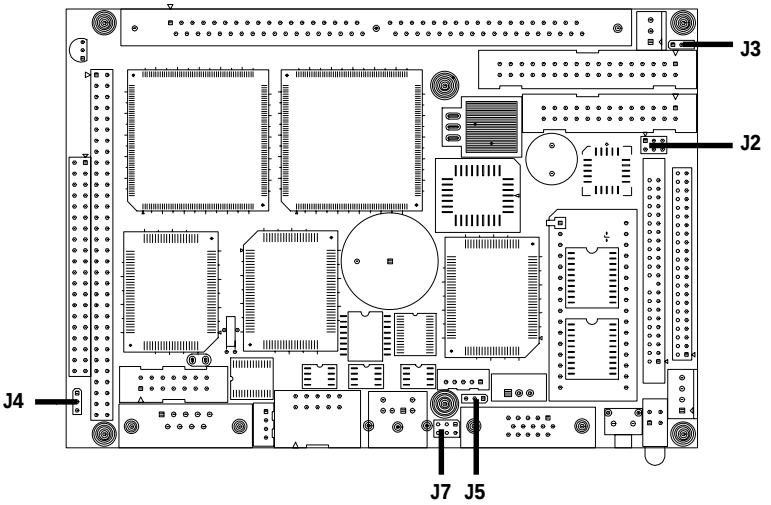


Figure 2-1: PCM-4825/4825L jumpers

2.3 Locating connectors

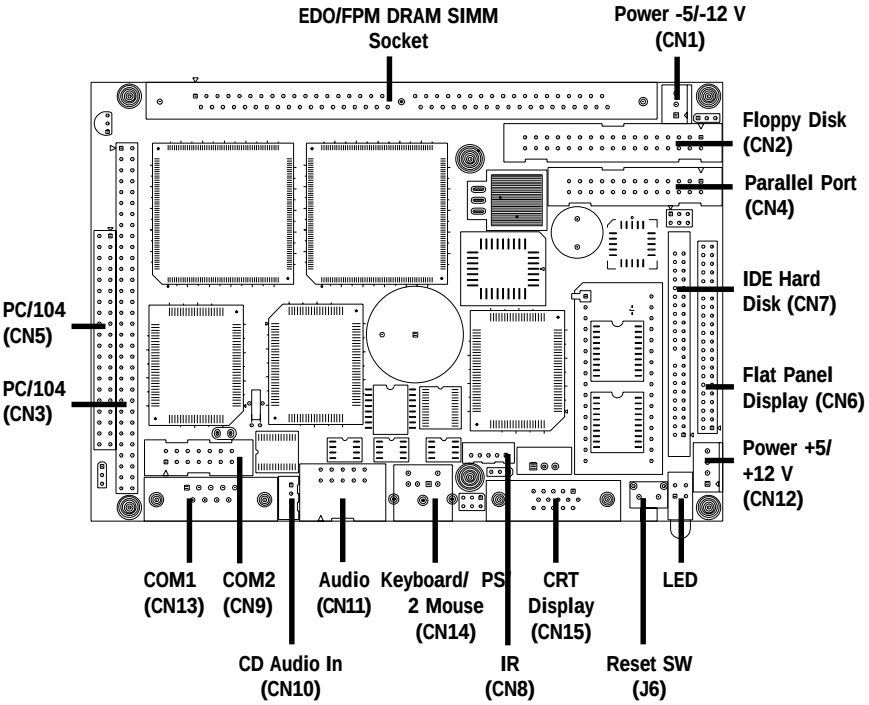
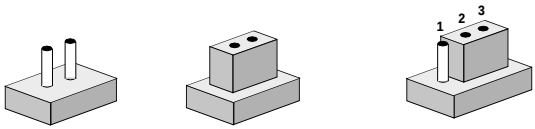


Figure 2-2: PCM-4825/4825L connectors

2.4 Setting jumpers

You may configure your card to match the needs of your application by setting jumpers. A jumper is the simplest kind of electrical switch. It consists of two metal pins and a small metal clip (often protected by a plastic cover) that slides over the pins to connect them. To "close" a jumper, you connect the pins with the clip. To "open" a jumper you remove the clip. Sometimes a jumper will have three pins, labeled 1, 2, and 3. In this case you would connect either pins 1 and 2 or 2 and 3.



Open **Closed** **Closed 2-3**

The jumper settings are schematically depicted in this manual as follows:

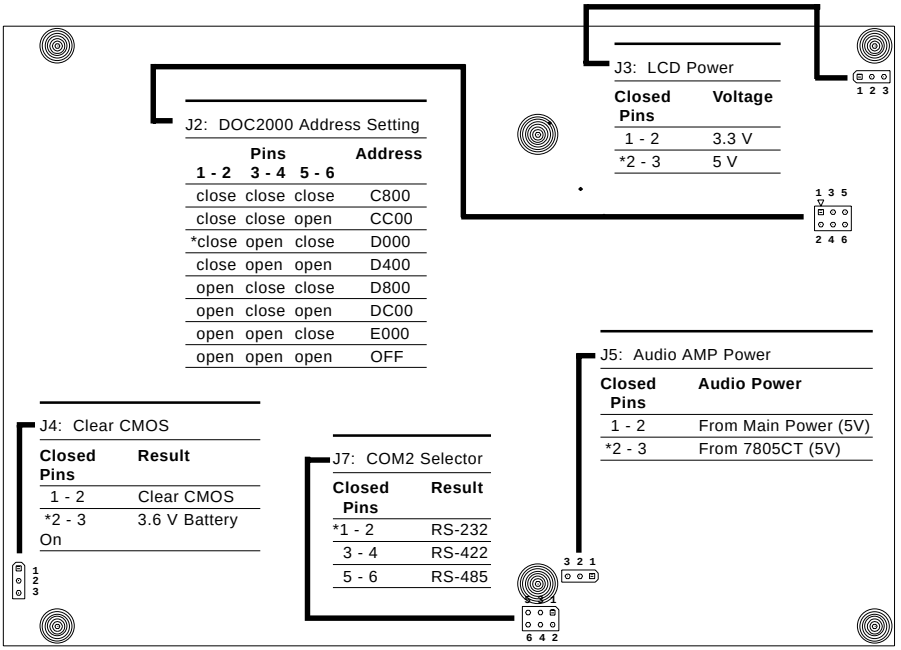
Open **Closed** **Closed 2-3**

A pair of needle-nose pliers may be helpful when working with jumpers.

If you have any doubts about the best hardware configuration for your application, contact your local distributor or sales representative before you make any changes.

Generally, you simply need a standard cable to make most connections.

2.4.1 PCM-4825 Jumper Settings



J2: DOC2000 Address Setting

Pins 1 - 2	3 - 4	5 - 6	Address
close	close	close	C800
close	close	open	CC00
*close	open	close	D000
close	open	open	D400
open	close	close	D800
open	close	open	DC00
open	open	close	E000
open	open	open	OFF

J3: LCD Power

Closed Pins	Voltage
1 - 2	3.3 V
*2 - 3	5 V

J4: Clear CMOS

Closed Pins	Result
1 - 2	Clear CMOS
*2 - 3	3.6 V Battery On

J5: Audio AMP Power

Closed Pins	Audio Power
1 - 2	From Main Power (5V)
*2 - 3	From 7805CT (5V)

J7: COM2 Selector

Closed Pins	Result
*1 - 2	RS-232
3 - 4	RS-422
5 - 6	RS-485

** default setting*

Figure 2-3 PCM-4825 Jumper Settings

2.5 Safety precautions

Warning! *Always completely disconnect the power cord from your board whenever you are working on it. Do not make connections while the power is on because sensitive electronic components can be damaged by the sudden rush of power.*

Caution! *Always ground yourself to remove any static charge before touching the board. Modern electronic devices are very sensitive to static electric charges. Use a grounding wrist strap at all times. Place all electronic components on a static-dissipative surface or in a static-shielded bag when they are not in the chassis.*

2.6 Installing DRAM (SIMMs)

You can install anywhere from 1 MB to 32 MB of on-board DRAM memory using 1, 2, 4, 8, 16 or 32 MB 72-pin SIMMs (Single In-Line Memory Modules). DRAM access time ≤ 60 ns.

2.6.1 Installing SIMMs

NOTE: The modules can only fit into a socket one way and their gold pins must point down into the SIMM socket.

The procedure for installing SIMMs appears below. Please follow these steps carefully.

1. Ensure that all power supplies to the system are switched Off.
2. Install the SIMM card. Install the SIMM so that its gold pins point down into the SIMM socket.
3. Slip the SIMM into the socket at a 45 degree angle and carefully fit the bottom of the card against the connectors.
4. Gently push the SIMM into a perpendicular position until the clips on the ends of the SIMM sockets snap into place.
5. Check to ensure that the SIMM is correctly seated and all connector contacts touch. The SIMM should not move around in its socket.

2.7 IDE hard drive connector (CN7)

The built-in Enhanced IDE (Integrated Device Electronics) controller supports up to two IDE devices, including CD-ROM drives, tape backup drives, a large hard disk drive and other IDE devices. It also supports faster data transfer rates and allows the IDE hard disk drive to exceed 528 MB.

2.7.1 Connecting the hard drive

Connecting drives is done in a daisy-chain fashion and requires one of two cables, depending on the drive size. 1.8" and 2.5" drives need a 1 x 44-pin to 2 x 44-pin flat-cable connector. 3.5" drives use a 1 x 44-pin to 2 x 40-pin connector.

Wire number 1 on the cable is red or blue, and the other wires are gray.

1. Connect one end of the cable to CN7. Make sure that the red (or blue) wire corresponds to pin 1 on the connector, which is labeled on the board (on the right side).
2. Plug the other end of the cable to the Enhanced IDE hard drive, with pin 1 on the cable corresponding to pin 1 on the hard drive. (See your hard drive's documentation for the location of the connector.)

Connect a second drive as described above.

Unlike floppy drives, IDE hard drives can connect to either end of the cable. If you install two drives, you will need to set one as the master and one as the slave by using jumpers on the drives. If you install just one drive, set it as the master.

2.8 Keyboard and PS/2 connector (CN14)

The PCM-4825/4825L board provides a mini-DIN keyboard connector which supports both a keyboard and a PS/2 style mouse. In most cases, especially in embedded applications, a keyboard is not used. The standard PC/AT BIOS will report an error or fail during power-on self test (POST) after a reset if the keyboard is not present. The PCM-4825/4825L board's BIOS standard setup menu allows you to select "All, But Keyboard" under the "Halt On" selection. This allows no-keyboard operation in embedded system applications without the system halting under POST (power-on-self-test).

2.9 Power connector (CN12)

2.9.1 Main power connector, +5V, +12V (CN12)

Supplies main power to the PCM-4825/4825L (+5 V) and devices that require +12 V.

2.10 IR connector (CN8)

This connector supports the optional wireless infrared transmitting and receiving module. This module mounts on the system case. You must configure the setting through BIOS setup.

2.11 Audio interfaces (CN10, CN11)

The PCM-4825 is equipped with a high quality audio interface, which provides 16-bit CD-quality recording and playback as well as OPL3 compatible FM music. It is supported by all major operating systems and is 100% Sound Blaster Pro compatible.

2.11.1 Audio connector (CN11)

The PCM-4825 provides all major audio signals on a 16-pin flat-cable connector, CN11. These audio signals includes Microphone in (mono), Line in (stereo), Line out (stereo) and Speaker out (stereo). You will need an adapter cable if you use traditional telephone jack connectors for these audio signals.

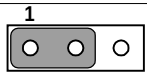
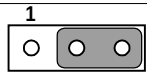
2.11.2 CD audio input connector (CN10)

All CD-ROM drives can provide analog audio signal output when used as a music CD player. The CN10 on PCM-4825 is a connector to input CD audio signal into the audio controller. The audio cable of your CD-ROM drive will be used to connect to CN10.

2.11.3 Audio amplifier power source setting (J5)

The PCM-4825 is designed to work with a single +5 V power supply. The audio interface can also function normally using a single +5 V power supply. The single +5 V main power supply is provided at V_{CC}. A stable +5 V power supply is provided at 7805CT 5 V via the power regulator 7805. This power supply filters out noise from other digital circuits and provides improved audio quality.

Table 2-3: Audio power source setting

	Main power +5 V	*7805CT 5V
J5		

*** default setting**

Configuration of the audio interface is done completely via the software utility. You do not have to set any jumpers. Refer to Chapter 6 for audio setup details.

2.12 Serial ports (CN13, CN9)

The PCM-4825/4825L offers two serial ports: one RS-232 and one RS-232/422/485. These ports let you connect to serial devices (a mouse, printers, etc.) or a communication network.

2.12.1 COM1 RS-232 port (CN13)

The serial port connectors are mounted on the bottom edge of the card. The 9-pin, D-SUB connector to the left of the card is the RS-232 port.

2.12.2 COM2 RS-232/422/485 selection (CN9)

The secondary port located above COM1, consists of a 14-pin, dual-in-line, male header and can be configured to operate in RS-232, RS-422, or RS-485 mode. This is done via J7.

Table 2-4: COM2 selection (J7)

	*RS-232	RS-422	RS-485
J7			

*** default setting**

The IRQ and address range for both ports are fixed. However if you wish to disable the port or change these parameters later, you can do this in the system BIOS setup. The table below shows the settings for the PCM-4825/4825L board's ports.

Table 2-5: PCM-4825/4825L Serial port default settings

Port	Address	Interrupt	Default
COM1	3F8, 3E8	IRQ4	3F8
COM2	2F8, 2E8	IRQ3	2F8

2.13 VGA interface connections

The PCM-4825/4825L board's SVGA interface can drive conventional CRT displays and is capable of driving a wide range of flat panel displays, including electroluminescent (EL), gas plasma, passive LCD and active LCD displays. The card has two connectors to support these displays, one for standard CRT VGA monitors and one for flat panel displays.

2.13.1 CRT display connector (CN15)

CN15 is a 15-pin, D-SUB connector commonly used for conventional CRT displays.

Pin assignments for CRT display connector CN15 are detailed in Appendix A.

2.13.2 Flat panel display connector (CN6)

CN6 consists of a 44-pin, dual-in-line header.

The PCM-4825/4825L provides a bias control signal on CN6 which can be used to control the LCD bias voltage. It is recommended that the LCD bias voltage not be applied to the panel until the logic supply voltage (+5 V) and panel video signals are stable. Under normal operation the control signal (ENAVEE) is active high. When the PCM-4825/4825L board's power is applied, the control signal is low until just after the relevant flat panel signals are present.

Configuration of the LCD type is done completely via the software utility. You do not have to set any jumpers. Refer to Chapter 3 for software setup details.

Refer to Chapter 3 for details on connecting the four standard LCD's: Sharp LM64183P, Toshiba LTM10C042, Sharp 64C142, and Planar EL Display.

CHAPTER 3

Software Configuration

This chapter details the software configuration information. It shows you how to configure the card to match your application requirements. Award system BIOS is covered in Chapter 4.

Sections include:

- LCD display configuration
- Connections for four standard LCDs

3.1 Introduction

The PCM-4825/4825L system BIOS and custom drivers are located in a 128 KB, 32-pin Flash ROM device, designated U2. A single Flash chip holds the system BIOS and VGA BIOS. The display type can be configured via software. This method minimizes the number of chips and eases configuration. You can change the display BIOS simply by reprogramming the Flash chip.

3.2 Utility disk

The PCM-4825/4825L is supplied with a software utility disk. This disk contains the necessary file for setting up the VGA display. Directories and files on the disk are as follows:

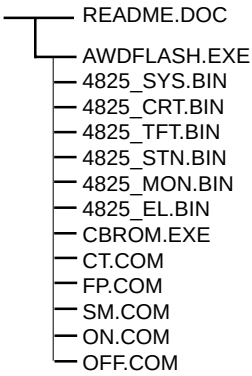


Figure 3-1: Contents of the PCM-4825/4825L utility disk

AWDFLASH.EXE
This program allows you to write the VGA BIOS files to the BIOS Flash ROM. The VGA files all come ready formatted for the PCM-4825/4825L with .BIN extensions. See README.DOC. These files support various CRT and flat panel displays. They are custom written and are available upon request.

4825_SYS.BIN
This binary file contains the system BIOS.

4825_CRT.BIN
Supports CRT only.

4825_TFT.BIN (default)
Supports 640 x 480 color TFT
(Toshiba LTM10C042).

4825_STN.BIN
Supports 640 x 480 color STN DD 8/16-bit displays
(Sharp LM64C142).

4825_MON.BIN
Supports 640 x 480 dual scan monochrome displays
(Sharp LM64P8X/837).

4825_EL.BIN
Supports 640 x 480 EL displays (PLANAR EL640480 - A Series).

CBROM.EXE
This program allows you to combine your own VGA BIOS with system BIOS (4825_SYS.BIN).

CT.COM

Enables CRT display only

EP.COM

Enables panel display only

SM.COM

Enables both displays at the same time

ON.COM

Switches to normal display mode

OFF.COM

Switches to sleep mode

3.3 VGA display software configuration

The PCM-4825/4825L on-board VGA/LCD interface supports a wide range of popular LCD, EL, gas plasma flat panel displays and traditional analog CRT monitors. The interface can drive CRT displays with resolutions up to 1280 x 1024 in 16 colors. It is also capable of driving color panel displays with resolutions of 1024 x 768. The LCD type is configured completely via the software utility, so you do not have to set any jumpers. Configure the LCD type as follows:

1. Apply power to the PCM-4825/4825L with a color TFT display attached. This is the default setting for the PCM-4825/4825L. Ensure that the AWDFLASH.EXE and *.BIN files are located in the working drive.

NOTE: Ensure that you do not run AWDFLASH.EXE while your system is operating in EMM386 mode.

2. At the prompt, type AWDFLASH.EXE and press <Enter>. The VGA configuration program will then display the following:

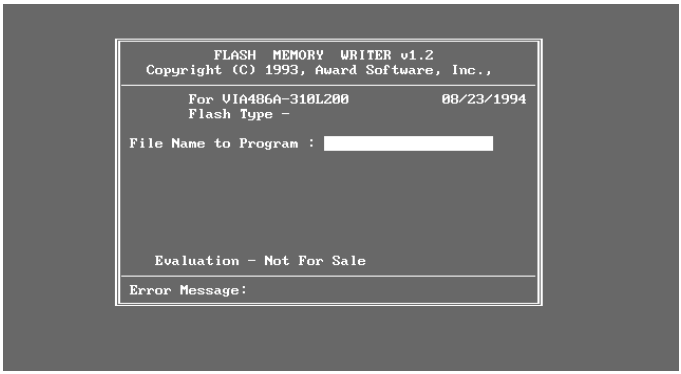


Figure 3-2: BIOS VGA setup screen

3. At the prompt, type in the BIN file which supports your display. When you are sure that you have entered the file name correctly press <Enter>. The screen will ask “Do you want to save?” If you wish to continue press Y. If you change your mind or have made a mistake press N.
4. If you decide to continue, the screen will issue a prompt which will then ask “Are you sure to program (Y/N)?” If you wish to continue, press Y. Press N to exit the program.

The new VGA configuration will then write to the ROM BIOS chip. This configuration will remain the same until you run the AWDFLASH.EXE program and change the settings.

3.4 Connections for four standard LCDs

3.4.1 Connections to Sharp LM64183P (640 x 480 DSTN MONO LCD)

Table 3-1: Connections for Sharp LM64183P LCD

LM64P83		PCM-4825/4825L CN6	
Pin	**Pin name**	**Pin**	**Pin name**
CN1-1	S	36	FLM
CN1-2	CP1	38	LP
CN1-3	CP2	35	SHFCLK
CN1-4	DISP	5	+5 V
CN1-5	VDD	6	+5 V
CN1-6	VSS	3	GND
CN1-7	VEE	-	-17 V (external power)
CN1-8	DU0	12	P3
CN1-9	DU1	11	P2
CN1-10	DU2	10	P1
CN1-11	DU3	9	P0
CN1-12	DL0	16	P7
CN1-13	DL1	15	P6
CN1-14	DL2	14	P5
CN1-15	DL3	13	P4

3.4.2 Connections to PLANAR EL (640 x 480 AD4 EL)

Table 3-2: Connections for Planar EL

PLANAR 640 x 480 AD4		PCM-4825/4825L CN6	
Pin	**Pin name**	**Pin**	**Pin name**
1	GND	3	GND
2	DO	21	P12
3	GND	3	GND
4	D1	22	P13
5	GND	3	GND
6	D2	23	P14
7	NC	—	—
8	D3	24	P15
9	NC	—	—
10	D4	17	P8
11	NC	—	—
12	D5	18	P9
13	NC	—	—
14	D6	19	P10
15	GND	4	GND
16	D7	20	P11
17	GND	4	GND
18	VCLK	42	ASHFCLK
19	GND	4	GND
20	/BLANK	—	—
21	GND	8	GND
22	HS	37	M
23	NC	—	—
24	VS	36	FLM
25	NC	—	—
26	SELFTST	39	GND
27	COLMAP	39	GND
28	ENABLE	—	—
29	RESERVED	—	—
30	/LOWPOW	—	—
31,32	NC	—	—
33	RESERVED	—	—
34	NC	—	—

3.4.3 Connections to Toshiba LTM10C042 (640 x 480 TFT Color LCD)

Table 3-3: Connections for Toshiba LTM10C042

LTM10C042		PCM-4825/4825L CN6	
Pin	**Pin name**	**Pin**	**Pin name**
1	GND	3	GND
2	CLK	35	SHFCLK
3	GND	4	GND
4	R0	27	P18
5	R1	28	P19
6	R2	29	P20
7	GND	8	GND
8	R3	30	P21
9	R4	31	P22
10	R5	32	P23
11	GND	33	GND
12	G0	19	P10
13	G1	20	P11
14	G2	21	P12
15	GND	33	GND
16	G3	22	P13
17	G4	23	P14
18	G5	24	P15
19	GND	34	GND
20	ENAB	37	M
21	GND	34	GND
22	B0	11	P2
23	B1	12	P3
24	B2	13	P4
25	GND	39	GND
26	B3	14	P5
27	B4	15	P6
28	B5	16	P7
29	GND	39	GND
30	VDD	5	+5 V
31	VDD	6	+5 V

3.4.4 Connections to Sharp LM64C142 (640 x 480 DSTN Color LCD)

Table 3-4: Connections for Sharp LM64C142

LM64C142		PCM-4825/4825L CN6	
Pin	**Pin name**	**Pin**	**Pin name**
CN1-1	YD	36	FLM
CN1-2	LP	38	LP
CN1-3	XCX	35	SHFCLK
CN1-4	DISP	5	+5 V
CN1-5	VDD	6	+5 V
CN1-6	VSS	3	GND
CN1-7	VEE	-	+27 V(external power)
CN1-8	DU0	20	P11
CN1-9	DU1	19	P10
CN1-10	DU2	18	P9
CN1-11	DU3	17	P8
CN1-12	DU4	12	P3
CN1-13	DU5	11	P2
CN1-14	DU6	10	P1
CN1-15	DU7	9	P0
CN2-1	VSS	4	GND
CN2-2	DL0	24	P15
CN2-3	DL1	23	P14
CN2-4	DL2	22	P13
CN2-5	DL3	21	P12
CN2-6	DL4	16	P7
CN2-7	DL5	15	P6
CN2-8	DL6	14	P5
CN2-9	DL7	13	P4
CN2-10	VSS	8	GND

CHAPTER 4

Award BIOS Setup

This chapter describes how to set BIOS configuration data.

4.1 System test and initialization

These routines test and initialize board hardware. If the routines encounter an error in during the tests, you will either hear a few short beeps or see an error message on the screen. There are two kinds of errors: fatal and non-fatal. The system can usually continue the boot up sequence with non-fatal errors. Non-fatal error messages usually appear on the screen along with the following instructions:

```
press <F1> to RESUME
```

Write down the message and press the F1 key to continue the bootup sequence.

4.1.1 System configuration verification

These routines check the current system configuration against the values stored in the card's CMOS memory. If they don't match, the program outputs an error message. You will then need to run the BIOS setup program to set the configuration information in memory.

There are three situations in which you will need to change the CMOS settings:

1. You are starting your system for the first time
2. You have changed the hardware attached to your system
3. The CMOS memory has lost power and the configuration information has been erased.

The PCM-4825/4825L board's CMOS memory has an integrated lithium battery backup. The battery backup should last ten years in normal service, but when it finally runs down, you will need to replace the complete unit.

4.2 Award BIOS setup

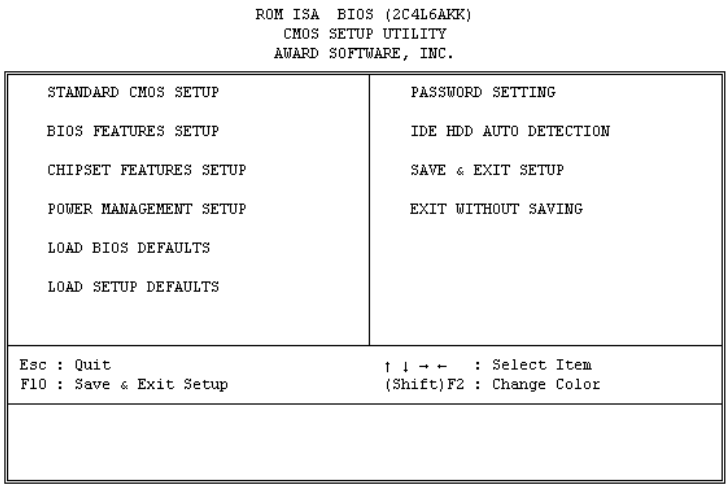


Figure 4-1: BIOS setup program initial screen

Award's BIOS ROM has a built-in setup program that allows users to modify the basic system configuration. This type of information is stored in battery-backed CMOS RAM so that it retains the setup information when the power is turned off.

4.2.1 Entering setup

Power on the computer and press <Del> immediately. This will allow you to enter Setup.

4.2.2 Standard CMOS setup

When you choose the STANDARD CMOS SETUP option from the INITIAL SETUP SCREEN menu, the screen shown below is displayed. This standard setup menu allows users to configure system components such as date, time, hard disk drive, floppy drive, display, and memory. Once a field is highlighted, on-line help information is displayed in the bottom left of the menu screen.

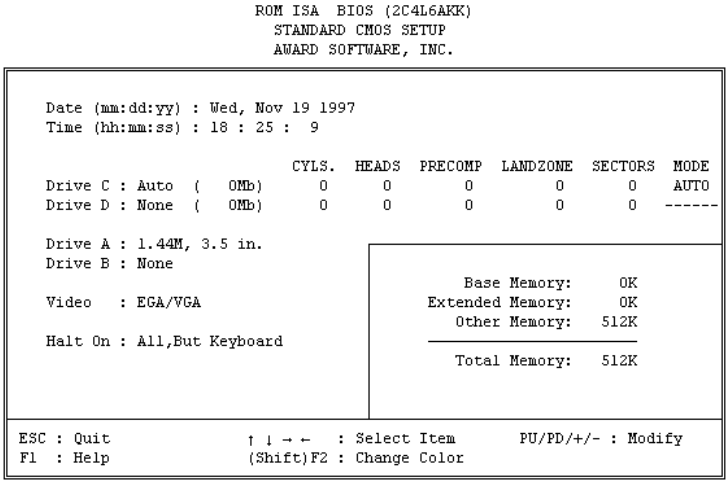

ROM ISA BIOS (2C4L6AKK)
STANDARD CMOS SETUP
AWARD SOFTWARE, INC.
Date (mm:dd:yy) : Wed, Nov 19 1997
Time (hh:mm:ss) : 18 : 25 : 9
CYLS. HEADS PRECOMP LANDZONE SECTORS MODE
Drive C : Auto (0Mb) 0 0 0 0 0 AUTO
Drive D : None (0Mb) 0 0 0 0 0 ------
Drive A : 1.44M, 3.5 in.
Drive B : None
Video : EGA/VGA
Halt On : All,But Keyboard
Base Memory: 0K
Extended Memory: 0K
Other Memory: 512K
Total Memory: 512K
ESC : Quit
F1 : Help
↑ ↓ → ← : Select Item
(Shift)F2 : Change Color
PU/PD/+/- : Modify

Figure 4-2: CMOS setup screen

4.2.3 BIOS features setup

By choosing the BIOS FEATURES SETUP option from the INITIAL SETUP SCREEN menu, the screen below is displayed. This sample screen contains the manufacturer's default values for the PCM-4825/4825L**.**

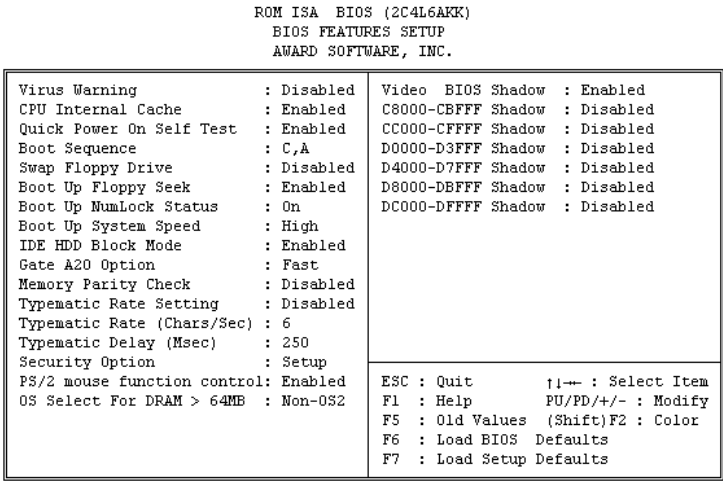

ROM ISA BIOS (2C4L6AKK)
BIOS FEATURES SETUP
AWARD SOFTWARE, INC.
Virus Warning : Disabled
CPU Internal Cache : Enabled
Quick Power On Self Test : Enabled
Boot Sequence : C,A
Swap Floppy Drive : Disabled
Boot Up Floppy Seek : Enabled
Boot Up NumLock Status : On
Boot Up System Speed : High
IDE HDD Block Mode : Enabled
Gate A20 Option : Fast
Memory Parity Check : Disabled
Typematic Rate Setting : Disabled
Typematic Rate (Chars/Sec) : 6
Typematic Delay (Msec) : 250
Security Option : Setup
PS/2 mouse function control: Enabled
OS Select For DRAM > 64MB : Non-OS2
Video BIOS Shadow : Enabled
C8000-CBFFF Shadow : Disabled
CC000-CFFFF Shadow : Disabled
D0000-D3FFF Shadow : Disabled
D4000-D7FFF Shadow : Disabled
D8000-DBFFF Shadow : Disabled
DC000-DFFFF Shadow : Disabled
ESC : Quit ↑↓→← : Select Item
F1 : Help PU/PD/+/- : Modify
F5 : Old Values (Shift)F2 : Color
F6 : Load BIOS Defaults
F7 : Load Setup Defaults

Figure 4-3: BIOS features setup

4.2.4 CHIPSET features setup

By choosing the CHIPSET FEATURES SETUP option from the INITIAL SETUP SCREEN menu, the screen below is displayed. This sample screen contains the manufacturer's default values for the PCM-4825/4825L.

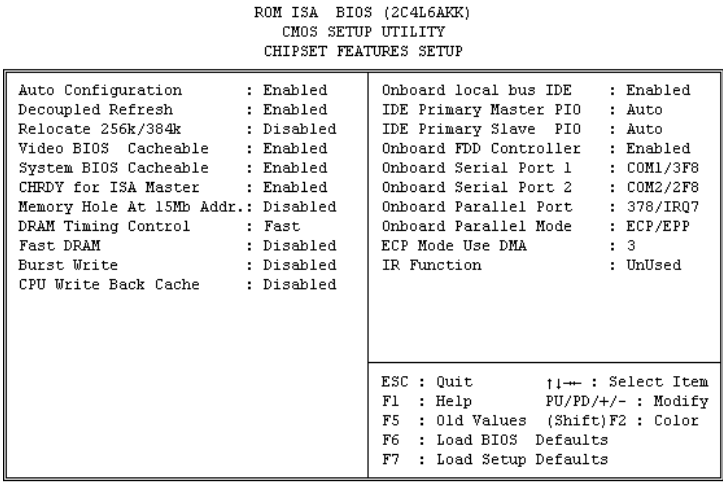

ROM ISA BIOS (2C4L6AKK)
CMOS SETUP UTILITY
CHIPSET FEATURES SETUP
Auto Configuration : Enabled
Decoupled Refresh : Enabled
Relocate 256k/384k : Disabled
Video BIOS Cacheable : Enabled
System BIOS Cacheable : Enabled
CHRDY for ISA Master : Enabled
Memory Hole At 15Mb Addr.: Disabled
DRAM Timing Control : Fast
Fast DRAM : Disabled
Burst Write : Disabled
CPU Write Back Cache : Disabled
Onboard local bus IDE : Enabled
IDE Primary Master PIO : Auto
IDE Primary Slave PIO : Auto
Onboard FDD Controller : Enabled
Onboard Serial Port 1 : COM1/3F8
Onboard Serial Port 2 : COM2/2F8
Onboard Parallel Port : 378/IRQ7
Onboard Parallel Mode : ECP/EPP
ECP Mode Use DMA : 3
IR Function : UnUsed
ESC : Quit ↑↓→← : Select Item
F1 : Help PU/PD/+/- : Modify
F5 : Old Values (Shift)F2 : Color
F6 : Load BIOS Defaults
F7 : Load Setup Defaults

Figure 4-4: CHIPSET features setup

4.2.5 Power management setup

By choosing the POWER MANAGEMENT SETUP option from the INITIAL SETUP SCREEN menu, the screen below is displayed. This sample screen contains the manufacturer's default values for the PCM-4825/4825L.

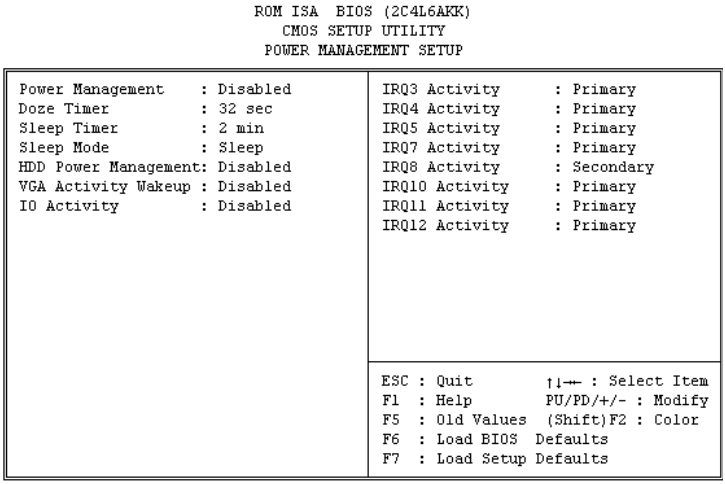

ROM ISA BIOS (2C4L6AKK)
CMOS SETUP UTILITY
POWER MANAGEMENT SETUP
Power Management : Disabled
Doze Timer : 32 sec
Sleep Timer : 2 min
Sleep Mode : Sleep
HDD Power Management: Disabled
VGA Activity Wakeup : Disabled
IO Activity : Disabled
IRQ3 Activity : Primary
IRQ4 Activity : Primary
IRQ5 Activity : Primary
IRQ7 Activity : Primary
IRQ8 Activity : Secondary
IRQ10 Activity : Primary
IRQ11 Activity : Primary
IRQ12 Activity : Primary
ESC : Quit ↑↓→← : Select Item
F1 : Help PU/PD/+/- : Modify
F5 : Old Values (Shift)F2 : Color
F6 : Load BIOS Defaults
F7 : Load Setup Defaults

Figure 4-5: Power management setup

4.2.6 Load BIOS defaults

BIOS DEFAULTS contains the default system values, which are the appropriate system parameters for minimum performance. These default values are loaded automatically if the stored record created by the Setup program becomes corrupted (and, therefore, unusable).

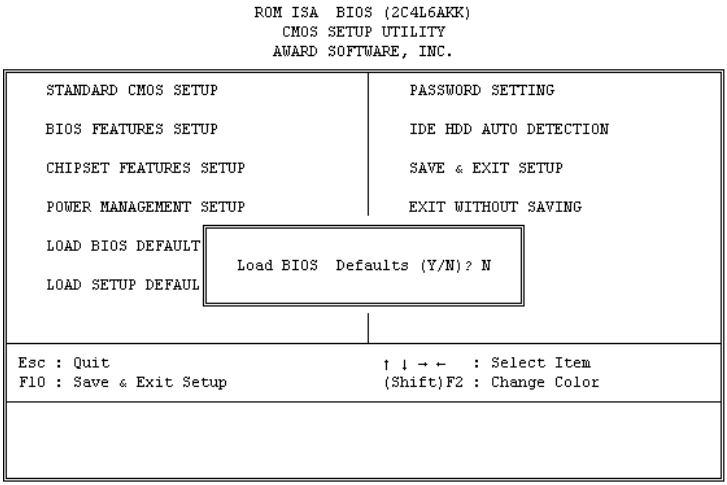


Figure 4-6: Load BIOS defaults screen

4.2.7 *Load setup defaults

"LOAD SETUP DEFAULTS" loads the values required by the system for maximum performance.

*: Default

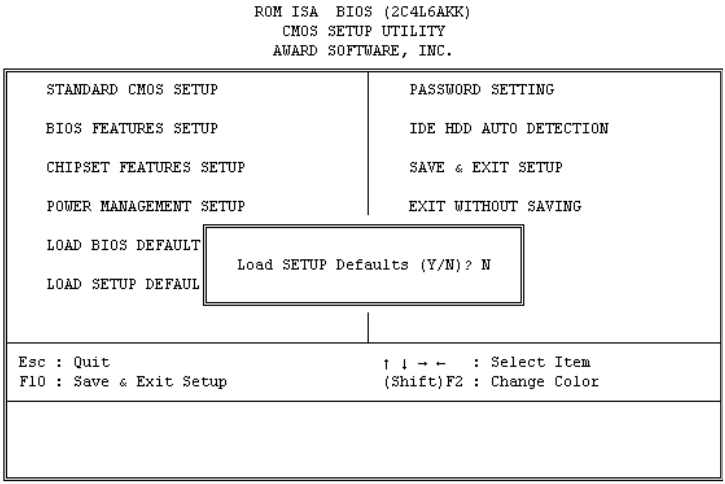


Figure 4-7: Load SETUP defaults screen

4.2.8 Change password

To change the password, choose the PASSWORD SETTING option form the Setup main menu and press <Enter>.

1. If the CMOS is bad or this option has never been used, there is default password which is stored in the ROM. The screen will display the following messages:

Enter Password:

Press <Enter>.

2. If the CMOS is good or this option has been used to change the default password, the user is asked for the password stored in the CMOS. The screen will display thefollowing message:

Confirm Password:

Enter the current password and press <Enter>.

3. After pressing <Enter> (ROM password) or the current password (user-defined), you can change the password stored in the CMOS. The password can be at most 8 characters long.

Remember - to enable this feature, you must first select either Setup or System in the BIOS FEATURES SETUP.

4.2.9 Security option

Access to the BIOS setup can be controlled using a password. A password will control access to the BIOS setup according to two differing options:

System password: The system will not boot and access to Setup will be denied unless the correct password is entered at the prompt.

Setup password: The system will boot, but access to Setup will be denied unless the correct password is entered at the prompt.

To disable security, first enter the BIOS setup and select the PASSWORD SETTING option in the main menu. When prompted to enter a password, press the <ENTER> key without entering a password, then save the new settings. This will will disable security. Now when you boot you will not be prompted for a password - you will enter setup directly.

If you lose or forget your password, the following steps restore default settings:

1. Power off the system.

2. Set jumper J4, connecting pins 1-2 for at least 3 seconds to clear CMOS entries.

3. Set jumper J4, connecting pins 2-3.

4. Power on the system.

5. Press the Del key to access CMOS settings. Modify the settings as desired, save, and exit.

4.2.10 Auto detect hard disk

The IDE HDD AUTO DETECTION utility can automatically detect the IDE hard disk installed in your system. You can use it to self-detect and/or correct the hard disk type configuration.

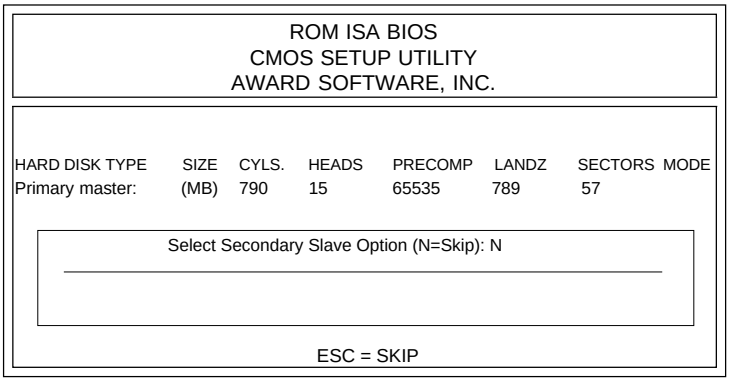

ROM ISA BIOS
CMOS SETUP UTILITY
AWARD SOFTWARE, INC.
HARD DISK TYPE SIZE CYLS. HEADS PRECOMP LANDZ SECTORS MODE
Primary master: (MB) 790 15 65535 789 57
Select Secondary Slave Option (N=Skip): N
ESC = SKIP

Figure 4-8: IDE HDD auto detection screen

4.2.11 Save & exit setup

If you select this option and press <Enter>, the values entered in the setup utilities will be recorded in the chipset's CMOS memory. The microprocessor will check this every time you turn your system on and compare this to what it finds as it checks the system. This record is required for the system to operate.

4.2.12 Exit without saving

Selecting this option and pressing <Enter> lets you exit the Setup program without recording any new values or changing old ones.

CHAPTER 5

SVGA Setup

The PCM-4825/4825L features an on-board flat panel/VGA interface. This chapter provides instructions for installing and operating the software drivers on the included display driver diskette.

5.1 Before you begin

To facilitate the installation of the enhanced display device drivers and utility software, you should read the instructions in this chapter carefully. The enhanced display drivers for the PCM-4825/4825L board are located on the software installation diskette. You must install the drivers and utility software by using the supplied SETUP program for DOS drivers

Note: The files on the software installation diskette are compressed. Do not attempt to install the drivers by copying the files manually. You must use the supplied SETUP program to install the drivers.

Before you begin, it is important to note that most display drivers need to have the relevant software application already installed in the system prior to installing the enhanced display drivers. In addition, many of the installation procedures assume that you are familiar with both the relevant software applications and operating system commands. Review the relevant operating system commands and the pertinent sections of your application software's user's manual before performing the installation.

5.2 Installation

Disk 1: Windows 3.1 driver

Disk 2: Windows 95, Windows NT drivers

Disk 3: OS/2 drivers

5.3 Simultaneous display mode

The 65550 VGA BIOS supports monochrome LCD, EL, color TFT and STN LCD flat panel displays. It also supports interlaced and non-interlaced analog monitors (VGA color and VGA mono-chrome) in high-resolution modes while maintaining complete IBM VGA compatibility. Digital monitors (i.e. MDA, CGA, and EGA) are NOT supported. Multiple frequency (multi-sync) monitors are supported as analog monitors.

Both CRT and panel displays can be used simultaneously. The PCM-4825/4825L can be set in one of three configurations: on a CRT, on a flat panel display, or on both simultaneously. The system is initially set to simultaneous display mode. In the utility diskette, there are three .COM files which can be used to select the display. Simply type the filename at the DOS prompt:

CT.COM Enables CRT display only

FP.COM Enables panel display only

SM.COM Enables both displays at the same time.

5.4 Sleep mode

The utility diskette contains two files that support sleep mode. Simply type the filename at the DOS prompt:

ON.COM switches to normal display mode.

OFF.COM switches to sleep mode.

5.5 Driver installation (Windows 3.1 & DOS)

5.5.1 Necessary prerequisites

The instructions in this manual assume that you understand elementary concepts of MS-DOS and the IBM Personal Computer. Before you attempt to install any driver or utility you should: know how to copy files from a floppy disk to a directory on the hard disk, understand the MS-DOS directory structure, and know how to format a floppy disk. If you are uncertain about any of these concepts, please refer to the DOS or Windows user reference guides for more information before you proceed with the installation.

5.5.2 Before you begin

Before you begin installing software drivers, you should make a backup copy of the display driver diskette and store the original in a safe place. The display driver diskette contains drivers for several versions of certain applications. You must install the correct version in order for the driver to work properly so make sure you know which version of the application you have.

5.5.3 Windows setup

These drivers are designed to work with Microsoft Windows 3.1. You may install these drivers through Windows or in DOS.

Step 1: Install Windows as you normally would for a VGA display. Run Windows to make sure that it is working correctly.

Step 2: Place the display driver diskette in drive A. In Windows Program Manager, choose ***File*** from the Options Menu. Then from the pull-down menu, choose ***Run . . . .*** At the command line prompt, type **A:\SETUP**. Press the <ENTER> key or click ***OK*** to begin the installation. At this point the setup program locates the directory where Windows is installed. For proper operation, the drivers must be installed in the Windows subdirectory. Press <ENTER> to complete the installation. Once completed, the

Display Driver Control Panel appears on the screen. This Control Panel allows you to select and load the installed drivers.

Another method of installing these drivers is through the File Manager. Click on ***Drive A:***. Then double-click on ***SETUP.EXE*** to begin installation.

5.5.4 Changing display drivers in Windows

To change display drivers in Windows, select the ***Windows Setup*** icon from the Main window. You will be shown the current setup configuration. Select ***Change System Settings*** from the Option menu. Click on the arrow at the end of the Display line. You will be shown a list of display drivers. Click on the driver you want. Then click on the ***OK*** button. Follow the directions to complete the setup.

5.5.5 Changing color schemes

After you change display drivers, you may notice that the color scheme used by Windows looks strange. This is because different drivers have different default colors. To change the color scheme, select the ***Control Panel*** from the Main window. Select the ***Color*** icon. You will be shown the current color scheme. Choose a new color scheme and click the ***OK*** button.

5.5.6 DOS setup

Step 1: Install Windows as you normally would for a VGA display. Run Windows to make sure that it is working correctly. Then exit Windows.

Step 2: Place the display driver diskette in drive A. Type **A:** <ENTER> to make this the default drive. Type **SETUP** <ENTER> to run the driver SETUP program. Press any key to get to the applications list. Using the arrow keys, select ***Windows Version 3.1*** and press the <ENTER> key. Press the <ENTER> key to select ***All Resolutions***, and then press <END> to begin the installation. At this point you will be asked for the path to your Windows system directory (default C:\WINDOWS). When the installation is complete, press any key to continue. Press <ESC> followed by Y to exit to DOS.

Step 3: Change to the directory where you installed Windows (usually C:\WINDOWS).

Step 4: Type **SETUP** <ENTER> to run the Windows Setup program. It will show the current Windows configuration. Use the up arrow key to move to the Display line and press <ENTER>. A list of display drivers will be shown. Use the arrow keys to select one of the drivers starting with an asterisk (*) and press <ENTER>.

Step 5: Follow the directions on the screen to complete the setup. In most cases, you may press <ENTER> to accept the suggested option. When Setup is done, it will return to DOS. Type **WIN** <ENTER> to start Windows with the new display driver.

5.5.7 Changing display drivers in DOS

To change display drivers from DOS, change to the Windows directory and run Setup, repeating steps 4 and 5 from the previous page. Besides the special display drivers marked by an asterisk (*), you should be able to use the following standard drivers:

VGA	640x480, 16 colors
Super VGA	800x600, 16 colors

5.5.8 Panning drivers

Special panning drivers are provided to allow high-resolution modes to be displayed on a flat panel or CRT. These drivers will show a section of a larger screen and will automatically pan, or scroll, the screen horizontally and vertically when the mouse reaches the edge of the display.

5.5.9 Linear acceleration drivers

A special high-performance linear acceleration driver is provided for 256-color modes. This driver may require special hardware and may not be supported on all systems.

5.6 Windows 95 drivers setup procedure

1. Boot system with VGA or SuperVGA driver.
2. Select properties from a menu after right button press.
3. Select display.
4. Select Change Display.
5. Select Change Monitor.
6. Select Change Adapter.
7. Select Have Disk.

5.7 Windows NT drivers setup procedure

5.7.1 Step 1

1. Install Windows NT as you normally would for a VGA display.
2. First click the Start button,choose Settings and click on Control Panel.
3. Choose the Display icon and click on the icon.
4. In the Display Properties window, click on the Settings tab.
5. Click on Change Display Type. In the Change Display Type window, click on the Change button under Adapter Type. This will bring up the Select Device window.

5.7.2 Step 2

1. In the Select Device window, click on Have Disk. Enter source directory where the Windows NT driver files are located.
2. Press <ENTER> and the name of the Chips and Technologies Video Accelerator driver will appear in the Models list box. Select a driver, then click OK or press enter.
3. A warning panel about Third Party drivers will appear. Click the Yes button to finish installation.
4. Once the installation is complete, the system must be shut down and restarted.

5.7.3 Step 3

1. Upon restarting your computer, select the desired display settings from the Display property dialog box.
2. Click on Test to test the newly selected graphics mode. A color test screen should appear, followed by the Testing Mode window.
3. Click on Yes to continue. Click on Apply to switch to the new graphics mode.
4. Since graphics modes are changed dynamically with NT 4.0, you need not shutdown and restart to give effect to the new screen settings.

5.8 OS/2 drivers setup procedure

5.8.1 Preliminary steps

The following steps must be performed before you install the 65550/554 display driver:

1. OS/2 DOS support must be installed.
2. If you previously installed SVGA support, you must reset the system to VGA mode. VGA is the default video mode enabled when OS/2 is installed.

To restore VGA mode, use Selective Install and select VGA for Primary Display. For more information on this procedure, see the section on Changing Display Adapter Support in the OS/2 User's Guide.

5.8.2 Installing from diskette

To install this driver, do the following steps:

1. Open an OS/2 full screen or window session.
2. Place the 65550 Display Driver Diskette in drive A.
3. At the OS/2 command prompt, type the following commands to copy the files to the OS/2 drive:

Type:

```
A: <ENTER> to make this the default drive.
SETUP A: C: <ENTER>
```

where A: is the floppy disk drive and C: is the hard drive

When the setup program is completed, you will need to perform a shutdown and then restart the system in order for changes to take effect.

A log of the information output during the install can be found in <root>:\OS2\INSTALL\DISPLAY.LOG

4. After restarting the system, perform the following steps:

    1. Open the OS/2 System folder.
    2. Open the System Setup folder.
    3. Open the Display Driver Install Object

This step will execute the Display Driver Installation (DSPINSTL) utility program to finish installation of the new drivers.

    4. When the Display Driver Install window appears, select Primary Display and then select OK.
    5. When The Primary Display Driver List window appears, select “Chips and Technologies 65550/554” from the list of adapter types, then select OK to install the video driver.
    6. When the installation is complete, you will need to shutdown and then restart the system for the changes to take effect. Make sure to remove the install diskette before restarting the system.

When the system has restarted, the display driver will be initialized for 640x480x256 color, 60 Hz refresh. To switch to a different video resolution, color depth or refresh rate, follow the steps below.

5.8.3 Selecting monitor type

Monitor type is initially set to DEFAULT. This DEFAULT setting may not allow you to select all resolution/refresh combinations that are available for your monitor. The following steps can be performed to select monitor type. This section applies only after installation, or when a different monitor is used.

1. Open the OS/2 System folder.
2. Open the System Setup folder.
3. Open the System object.
4. When the System - Settings notebook appears, select the Screen tab. This will take you to page 2 of the settings.
5. On Screen page 2, select your monitor type from the Display Name list. If your monitor is not listed, select DEFAULT. Return to Screen page 1.

It may be necessary to restart your system to have all refresh rate options available.

5.8.4 Selecting screen resolution/refresh rate

To switch to a different video resolution, color depth or refresh rate, follow the steps below.

1. Open the OS/2 System folder.
2. Open the System Setup folder.
3. Open the System object.
4. From the selection windows provided, select a new Screen Resolution and Screen refresh rate.

Please note, Refresh rates, other than 60 Hz, are only valid when the display is switched to CRT only display mode.

5. Close the System-Settings notebook.
6. Perform a shutdown and restart for the changes to take effect.

5.8.5 Installation notes

1. During the installation of this driver, DISPLAY.LOG and DSPINSTL.LOG files are created in \OS2\INSTALL directory. These files identify the OS/2 system files that were updated and indicate whether the installation was successful. The DISPLAY.LOG file also contains a string which identifies the version of driver that was installed. This information may be important when reporting an installation problem.

2. During installation, DSPINSTL will invoke the SVGA Configuration program SVGA.EXE to determine the hardware configuration, and create the file \OS2\INSTALL\SVGADATA.PMI. If this file is not created, the adapter will not be supported. When this step is done, the display will be blanked, and you may see a series of flashes on the display, and what appears to be a “corrupted” display. This is normal, as the configuration process is doing Video BIOS mode sets to determine which screen resolutions BIOS supports. This configuration information is then used to provide the System-Settings Resolution and Refresh selections.

CHAPTER 6

Audio Setup

The PCM-4825 is equipped with an audio interface that records and playsback CD-quality audio. This chapter provides instructions for installing the software drivers on the included audio driver diskettes.

6.1 Introduction

The PCM-4825/4825L on board audio interface provides high-quality stereo sound and FM music synthesis (ESFM) by using the ES1868 or ES1869 audio controller from ESS Technology, Inc. The audio interface can record, compress, and play back voice, sound, and music with built-in mixer controls.

The PCM-4825/4825L on-board audio interface also supports the Plug and Play (PnP) standard and provides PnP configuration for the audio, FM, and MPU-104 logical devices. It is compatible with Sound Blaster™; Sound Blaster Pro™ version 3.01, voice and music functions. The ESFM synthesizer is register compatible with the OPL3 and has extended capabilities.

6.2 DOS utilities

The ES1868/1869 audio controller supports PC games and applications for Sound Blaster™ and Sound Blaster Pro™ with no need for a device driver in a DOS environment. The default setting for the audio controller in DOS are listed as follows.

Address: 220H

IRQ: 9

DMA: 1

MPU-401: Disabled

6.2.1 Changing settings in DOS

The audio controller setting can be changed in DOS environment by using the DOS SETUP utility located in the UTILITY subdirectory of audio driver diskette.

To change the setting, simply type DOSSET at the DOS prompt. Follow the instructions on screen to choose the new setting for the ES1868/1869 audio controller.

6.2.2 Controlling volume in DOS

The ES1868/1869 audio controller provides software control for the setting of audio volumes. The VOLUME CONTROL utility located in the UTILITY subdirectory of the audio driver diskette is used to control the volume setting in DOS.

To control the volume setting, simply type ESSVOL at the DOS prompt with appropriate parameters. The syntax of ESSVOL is shown as follows.

ESSVOL [/?] [/v:xx] [/l:xx] [/w:xx] [/m:xx] [/c:xx] [/s:xx] [/a:xx]

no option	Display all volume settings.
/?	Display this message.
/v	Change master volume.
/l	Change line volume.
/w	Change wave volume.
/m	Change microphone volume.
/c	Change CD volume.
/s	Change Synthesizer volume.
/a	Change AuxB volume.
/p	Change PC speaker volume.
xx	Volume (xx = 0 if omitted)

The value range of volume is 0 - 15.

[PC speaker volume range is 0 - 7]

6.3 Driver installation

6.3.1 Before you begin

To facilitate the installation of the audio drivers, you should read the instructions in this chapter carefully before you attempt installation. The audio drivers for the PCM-4825/4825L board are located on the audio driver diskettes. You must install the drivers by using the supplied SETUP program.

Note: *The files on the software installation diskette are compressed. Do not attempt to install the drivers by copying the files manually. You must use the supplied SETUP program to install the drivers.*

6.3.2 Windows 3.1 drivers

These drivers are designed to work with Microsoft Windows 3.1. You may install these drivers through Windows.

1. Run Windows to make sure that it is working correctly.
2. Place the audio driver diskette in drive A. In the Windows Program Manager, choose *File* from the Options Menu. Then from the pull-down menu, choose *Run . . . .* At the command line prompt, type A:\WIN31\SETUP. Press the <ENTER> key or click *OK* to begin the installation.
3. Click *Continue* when the "*Audio*Drive Setup" screen shows up. Click the *Driver Installation* button to choose installing the audio driver.
4. At this point, the setup program displays the "Set Hardware Setting" screen, which allows you to change the hardware setting of the audio controller in Windows. For proper operation, make sure the address, IRQ, and DMA settings are not used by other hardware. Press the <ENTER> key or click *OK* to complete the installation.

Once completed, you can change the settings or remove the audio driver by using the Windows's Control Panel program.

6.3.3 Windows 95 drivers

1. Boot your system and place the audio driver diskette in drive A.
2. Select *Add New Hardware* from the Windows Control Panel.
3. Click *Next* to bring up the Windows search for new hardware setup screen.
4. Select *No* and click *Next* button.
5. Select *Sound, video and game controllers* from the *Hardware types* list and click *Next* button.
6. Click *Have Disk*, type A:\WIN95 and press <ENTER> at the prompt.
7. Select *ES1868 Control Interface* and *ES1868 Plug and Play AudioDrive*. Press the <ENTER> key or click *OK* to begin the installation.
8. Restart your computer after the installation is completed.

APPENDIX A

Pin Assignments

This appendix contains information of a detailed or specialized nature. It includes:

- CRT display connector
- Flat panel display connector
- Main power connector
- RS-232/422/485 serial port connector
- Keyboard and mouse connector
- Peripheral power connector
- IDE connector
- RS-232 serial port connector
- Audio connector
- Floppy connector
- Parallel connector
- IR connector

A.1 CRT display connector (CN15)

Tabler A-1: PCM-4825/4825L CRT display connector

Pin	Signal	Pin	Signal
1	RED	9	N/C
2	GREEN	10	GND
3	BLUE	11	N/C
4	N/C	12	N/C
5	GND	13	H-SYNC
6	GND	14	V-SYNC
7	GND	15	N/C
8	GND		

A.2 Flat panel display connector (CN6)

Table A-2: PCM-4825/4825L flat panel display connector

Pin	Function	Pin	Function
1	+12 V	2	+12 V
3	GND	4	GND
5	Vcc	6	Vcc
7	ENAVEE	8	GND
9	P0	10	P1
11	P2	12	P3
13	P4	14	P5
15	P6	16	P7
17	P8	18	P9
19	P10	20	P11
21	P12	22	P13
23	P14	24	P15
25	P16	26	P17
27	P18	28	P19
29	P20	30	P21
31	P22	32	P23
33	GND	34	GND
35	SHFCLK	36	FLM
37	M	38	LP
39	GND	40	ENABKL
41	GND	42	ASHFCLK
43	ENAVDD	44	Vcc

A.3 COM2 RS-232/422/485 serial port (CN9)

Table A-3: PCM-4825/4825L COM2 RS-232/422/485 series port

Pin	RS-232 port	RS-422 port	RS-485 port
1	DCD	N/C	N/C
2	DSR	N/C	N/C
3	RxD	N/C	N/C
4	RTS	N/C	N/C
5	TxD	N/C	N/C
6	CTS	N/C	N/C
7	DTR	N/C	N/C
8	RI	N/C	N/C
9	GND	N/C	N/C
10	N/C	N/C	N/C
11	N/C	TxD+	DATA+
12	N/C	TxD-	DATA-
13	N/C	RxD+	N/C
14	N/C	RxD-	N/C

A.4 Keyboard and mouse connnector (CN14)

Table A-4: PCM-4825/4825L keyboard and mouse connector

Pin	Signal
1	KB DATA
2	MS DATA
3	GND
4	V_{CC}
5	KB CLOCK
6	MS CLOCK

A. 5 Main power connector (CN12)

Table A-5: PCM-4825/4825L main power connector

Pin	Signal
1	+12 V
2	GND
3	GND
4	+5 V

A.6 IDE hard drive connector (CN7)

Table A-6: PCM-4825/4825L IDE hard drive connector

Pin	Signal	Pin	Signal
1	IDE RESET	2	GND
3	DATA 7	4	DATA 8
5	DATA 6	6	DATA 9
7	DATA 5	8	DATA 10
9	DATA 4	10	DATA 11
11	DATA 3	12	DATA 12
13	DATA 2	14	DATA 13
15	DATA 1	16	DATA 14
17	DATA 0	18	DATA 15
19	SIGNAL GND	20	N/C
21	N/C	22	GND
23	IO WRITE	24	GND
25	IO READ	26	GND
27	IO CHANNEL READY	28	N/C
29	N/C	30	GND
31	IRQ14	32	IOCS16
33	ADDR 1	34	N/C
35	ADDR 0	36	ADDR 2
37	HARD DISK SELECT 0	38	HARD DISK SELECT 1
39	IDE ACTIVE	40	GND
41	VCC	42	VCC
43	GND	44	N/C

A.7 COM1 RS-232 serial port (CN13)

Table A-7: PCM-4825/4825L COM1 RS-232 serial port

Pin	Signal
1	DCD
2	RxD
3	TxD
4	DTR
5	GND
6	DSR
7	RTS
8	CTS
9	RI

A.8 Audio connector (CN10)

Table A-8: PCM-4825/4825L audio connector

Pin	Signal
1	AUX_L
2	GND
3	AUX_R
4	GND

A.9 Peripheral power connector (CN1)

Table A-9: PCM-4825/4825L peripheral power connector

Pin	Signal
3	-5 V
2	GND
1	-12 V

A.10 Floppy drive connector (CN2)

Table A-10: PCM-4825/4825L floppy drive connector

Pin	Signal	Pin	Signal
1	GND	2	DENSITY SELECT
3	GND	4	N/C
5	GND	6	N/C
7	GND	8	INDEX
9	GND	10	MOTOR 0
11	GND	12	DRIVE SELECT 1
13	GND	14	DRIVE SELECT 0
15	GND	16	MOTOR 1
17	GND	18	DIRECTION
19	GND	20	STEP
21	GND	22	WRITE DATA
23	GND	24	WRITE GATE
25	GND	26	TRACK 0
27	GND	28	WRITE PROTECT
29	GND	30	READ DATA
31	GND	32	HEAD SELECT
33	GND	34	DISK CHANGE

A.11 Parallel port connector (CN4)

Table A-11: PCM-4825/4825L parallel port connector

Pin	Signal
1	\STROBE
2	\AUTOFD
3	D0
4	ERR
5	D1
6	\INIT
7	D2
8	\SLCTINI
9	D3
10	GND
11	D4
12	GND
13	D5
14	GND
15	D6
16	GND
17	D7
18	GND
19	\ACK
20	GND
21	BUSY
22	GND
23	PE
24	GND
25	SLCT
26	N/C

A.12 Audio connector (CN11)

Table A-12: PCM-4825/4825L Sound connector

Pin	Signal
1	SPEAKER_R-
2	SPEAKER_R+
3	SPEAKER_L-
4	SPEAKER_R+
5	LINE OUT_L
6	LINE OUT_R
7	LINE IN_L
8	LINE IN_R
9	MIC IN
10	GND

A.13 IR connector (CN8)

Table A-13: PCM-4825/4825L IR connector

Pin	Signal
1	+5 V
2	N/C
3	IR_RX
4	GND
5	IR_TX

A.14 System I/O ports

System I/O ports	
Addr. range (Hex)	**Device**
000-01F	DMA controller
020-021	Interrupt controller 1, master
022-023	Chipset address
040-05F	8254 timer
060-06F	8042 (keyboard Controller)
070-07F	Real-time clock, non-maskable interrupt (NMI) mask
080-09F	DMA page register,
0A0-0BF	Interrupt controller 2
0C0-0DF	DMA controller
0F0	Clear math co-processor
0F1	Reset math co-processor
0F8-0FF	Math co-processor
1F0-1F8	Fixed disk
200-207	Game I/O
278-27F	Parallel printer port 2 (LPT 3)
2F8-2FF	Serial port 2
300-31F	Prototype card
360-36F	Reserved
378-37F	Parallel printer port 1 (LPT 2)
380-38F	SDLC, bisynchronous 2
3A0-3AF	Bisynchronous 1
3B0-3BF	Monochrome display and printer adapter(LPT1)
3C0-3CF	Reserved
3D0-3DF	Color/graphics monitor adapter
3F0-3F7	Diskette controller
3F8-3FF	Serial port 1

* PNP audio I/O map range from 220 ~ 250H (16 bytes)
  MPU-401 select from 300 ~ 330H (2 bytes)

A.15 DMA channel assignments

DMA channel assignments

Channel	Function
0	Available
1	Available
2	Floppy disk (8-bit transfer)
3	Available
4	Cascade for DMA controller 1
5	Available
6	Available
7	Available

* Audio DMA select 0, 1 or 3

A.16 Interrupt assignments

Interrupt assignments

Priority	Interrupt#	Interrupt source
1	NMI	Parity error detected
2	IRQ 0	Interval timer
3	IRQ 1	Keyboard
-	IRQ 2	Interrupt from controller 2 (cascade)
4	IRQ 8	Real-time clock
5	IRQ 9	Cascaded to INT 0A (IRQ 2)
6	IRQ 10	Available
7	IRQ 11	Available
8	IRQ 12	PS/2 mouse
9	IRQ 13	INT from co-processor
10	IRQ 14	Fixed disk controller
11	IRQ 15	Available
12	IRQ 3	Serial communication port 2
13	IRQ 4	Serial communication port 1
14	IRQ 5	Parallel port 2
15	IRQ 6	Diskette controller (FDC)
16	IRQ 7	Parallel port 1 (print port)

* PNP audio IRQ select: 5, 7,9, 10, 11 or 12

A.17 1st MB memory map

1st MB memory map	
Addr. range (Hex)	**Device**
F000h - FFFFh	System ROM
C800h - EFFFh	Unused
C000h - C7FFh	Expansion ROM
B800h - BFFFh	CGA/EGA/VGA text
B000h - B7FFh	Unused
A000h - AFFFh	EGA/VGA graphics
0000h - 9FFFh	Base memory

* D000 - D400H DOC 2000

APPENDIX **B**

Installing PC/104 Modules

This appendix gives instructions for installing PC/104 modules.

B.1 Installing PC/104 modules

The PCM-4825/4825L's PC/104 connectors give you the flexibility to attach PC/104 modules.

Installing these modules on the PCM-4825/4825L is quick and simple. The following steps show how to mount the PC/104 modules:

1. Remove the PCM-4825/4825L from your system paying particular attention to the safety instructions already mentioned above.
2. Make any jumper or link changes required to the CPU card now. Once the PC/104 module is mounted you may have difficulty in accessing these.
3. Normal PC/104 modules have male connectors and mount directly onto the main card. (Refer to the diagram on the following page.)
4. Mount the PC/104 module onto the CPU card by pressing the module firmly but carefully onto the mounting connectors.
5. Secure the PC/104 module onto the CPU card using the four mounting spacers and screws.

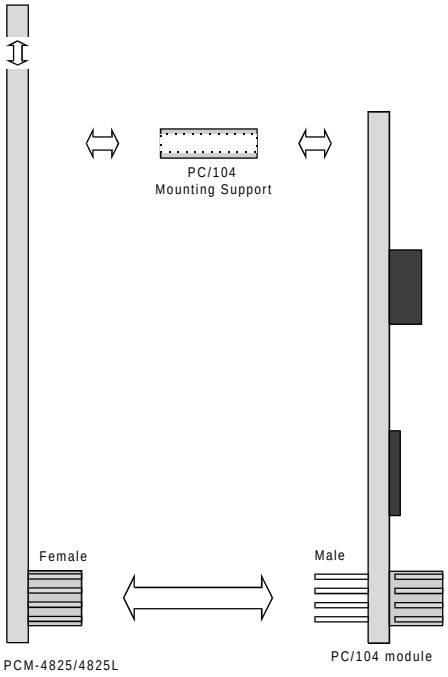


Figure B-1: PC/104 module mounting diagram

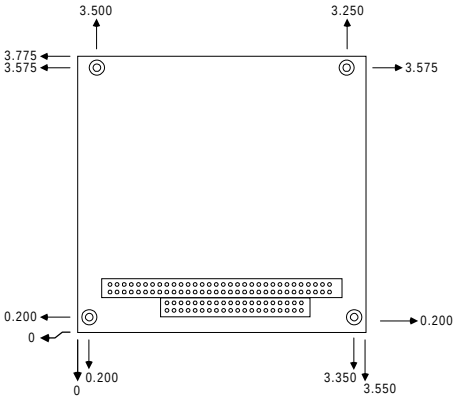


Figure B-2: PC/104 module dimensions (inches ±5 %)

Table B-1: PCA-4825 PC/104 connectors (CN3, CN5)

Pin Number	Signal (CN3) Row A	Row B	Signal (CN5) Row C	Row D
0	—	—	0 V	0 V
1	IOCHCHK*	0V	SBHE*	MEMCS16*
2	SD7	RESETDRV	LA23	IOCS16*
3	SD6	+5V	LA22	IRQ10
4	SD5	IRQ9	LA21	IRQ11
5	SD4	-5V	LA20	IRQ12
6	SD3	DRQ2	LA19	IRQ15
7	SD2	-12V	LA18	IRQ14
8	SD1	ENDXFR*	LA17	DACK0*
9	SD0	+12 V	MEMR*	DRQ0
10	IOCHRDY	N/C	MEMW*	DACK5*
11	AEN	SMEMW*	SD8	DRQ5
12	SA19	SMEMR*	SD9	DACK6*
13	SA18	IOW*	SD10	DRQ6
14	SA17	IOR*	SD11	DACK7*
15	SA16	DACK3*	SD12	DRQ7
16	SA15	DRQ3	SD13	+5V
17	SA14	DACK1*	SD14	MASTER*
18	SA13	DRQ1	SD15	0 V
19	SA12	REFRESH*	KEY	0 V
20	SA11	SYSCLK	—	—
21	SA10	IRQ7	—	—
22	SA9	IRQ6	—	—
23	SA8	IRQ5	—	—
24	SA7	IRQ4	—	—
25	SA6	IRQ3	—	—
26	SA5	DACK2*	—	—
27	SA4	TC	—	—
28	SA3	BALE	—	—
29	SA2	+5V	—	—
30	SA1	OSC	—	—
31	SA0	0 V	—	—
32	0 V	0 V	—	—

*active low

APPENDIX C

DOC 2000 Installation Guide

This appendix contains information on the DiskOnChip 2000 quick installation guide. It includes:

- DiskOnChip 2000 installation instructions
- Additional information and assistance

C.1 DiskOnChip®2000 quick installation guide

C.1.1 DiskOnChip 2000 installation instructions

1. Make sure the target platform is powered OFF.
2. Plug the DiskOnChip 2000 device into its socket. Verify the direction is correct (pin 1 of the DiskOnChip 2000 is aligned with pin 1 of the socket).
3. Power up the system.
4. During power up you may observe the messages displayed by the DiskOnChip 2000 when its drivers are automatically loaded into the system's memory.
5. At this stage the DiskOnChip 2000 can be accessed as any disk in the system.
6. If the DiskOnChip 2000 is the only disk in the system, it will appear as the first disk (drive C: in DOS).
7. If there are more disks besides the DiskOnChip 2000, the DiskOnChip 2000 will appear by default as the last drive, unless it was programmed as the first drive. (Please refer to the DiskOnChip 2000 utilities user manual.)
8. If you want the DiskOnChip 2000 to be bootable:

   a - Copy the operating system files into the DiskOnChip by using the standard DOS command (for example: sys d:).

   b - The DiskOnChip should be the only disk in the systems or would be configured as the first disk in the system (c:) using the DUPDATE utility.

```
DUPDATE D /S DOC104.EXB /FIRST      (set as c:)
DUPDATE C /S DOC104.EXB             (set as d:)
```

C.1.2 Additional information and assistance

1. Visit M-Systems Web site at www.m-sys.com where you can find Utilities Manual, Data Sheet and Application Notes. In addition, you can find the latest DiskOnChip 2000 S/W Utilities.

2. Contact your dealer for technical support if you need additional assistance, and have the following information ready:

- Product name and serial number.
- Description of your computer hardware (manufacturer, model, attached devices, etc.)
- Description of your software (operating system, version, application software, etc.)
- A complete description of the problem.
- The exact wording of any error messages.